REMARKS

Claims 23-34 and 37-51 are pending.

The specification was amended to correct an inadvertent typographical error. Claim 23 has been combined with claim 36, *inter alia*, to remove the description of Mn being less than 0.30%, thus, Mn is included in the "incidental elements and impurities." Claims 35 and 36 were cancelled consistent with this amendment. Claim 23 was also amended to more particularly define the order of steps.

I. Election/Restriction

Applicants confirm the provisional election of Group II, corresponding to claims 23-49, drawn to a process of working and heat treating an aluminum alloy. Accordingly, claims 1-22 have been cancelled without prejudice or disclaimer. Applicants expressly reserve the right to file one or more divisional applications containing claims directed to the non-elected subject matter.

II. Claim Objections

Claims 23-49 stand objected to as claim 23 (from which each of claims 24-49 depend) is dependent upon now-cancelled claim 1. In response, claim 23 has been placed in independent form. Reconsideration is respectfully requested.

III. 35 USC § 103

A. Heymes et al.

Claims 23 and 26-49 stand rejected under 35 USC § 103(a) as allegedly being unpatentable over Heymes et al. (U.S. Patent No. 6,077,363). The Office Action asserts the reference expressly teaches each feature recited by the rejected claims, except for the semi-continuous casting method being DC casting. However, the Office Action continues, because "DC casting is conventional and well known," such a casting procedure is within the scope of Heymes et al.

The Office Action additionally asserts the presently recited alloy elemental composition overlaps that of Heymes et al. and Heymes et al. teaches the presently claimed method. However, in light of the amendments to claim 23, reconsideration is respectfully requested.

Amended, claim 23 now recites steps a)-g) in order, this further distinguishs over Heymes et al.

Moreover, the alloy of amended claim 23 would have Mn at most in the "incidental elements and impurities." When the elemental ranges as recited by present claim 23 are selected and the alloy is processed in the order as recited, unexpected results are realized. Applicants direct the Examiner's attention to paragraphs [0070]-[0071], which state:

> [0070] It has surprisingly been found that lower levels of manganese result in a high toughness and an improved fatigue crack growth resistance specifically in areas where the toughness and fatigue crack growth resistance under tensile load are critical. Surprisingly, the alloy of the instant invention in the T3 temper, more specifically in the T351 temper, has a significant improved toughness by lowering the amount of manganese. Furthermore, it has been found that by increasing the amount of Si it is possible to achieve strength levels comparable with strength levels of conventional AA2x24 alloys. Furthermore, it has been found that by increasing the Si content improved FCGR performance is obtained. The Si content is increased to levels above those used in current aerospace grade materials, viz. typically <0.10, and preferably <0.07 wt.%.
> [0071] More specifically, it has been found that a reduction of the manganese level and by increasing the silicon level the fatigue crack growth resistance of the alloy could be enhanced by up to 90% compared to a conventional 2024 alloy and up to approximately 65% compared to a conventional 2024 alloy if the strength levels are maintained. In that case even the toughness was improved compared to the toughness of conventional 2024 alloys. By lowering the level of manganese toughness as well as fatigue crack growth resistance was increased wherein the strength levels decreased. By also increasing the level of silicon the strength level increased again without lowering the toughness to unacceptable levels.

(emphasis added)

Moreover, Table 3 of the present specification, shows 0% Mn and 0.11-0.25% Si, results in unexpectedly improved FCGR with high strength. As explained in paragraph [0102], Table 3 shows lowering Mn level improves lifetime as measured by FCGR and this improvement is more or less independent of Si-levels. Thus, while the Mn level is lowered, the Si level can be

increased to increase strength as shown in Table 2 without harming FCGR. This simultaneous control of these two ingredients is highly beneficial to achieve high strength, long lifetime alloys that are very useful for aeronautical purposes.

The data of Tables 2 and 3 of the present application is relevant to showing unexpected results over Heymes et al. because, as seen in Table 1 at page 9 of the application, Applicants compare alloys 1 and 2 of the present invention having 0% Mn to AA2024 and AA2524 alloys which have higher levels of Mn. As explained in Heymes et al., col. 6, line 6 and col. 7, line 2, its examples were also AA2024 alloys. These examples of Heymes et al. have comparable levels of Mn to the AA2024 and AA2524 examples in the present application.

Also, although present claim 1 theoretically allows the presence of 0% Fe, the reality is that some incidental or impurity level of Fe is always present in aluminum alloys. Typical low levels of Fe can be found in the present application disclosing 0.06%, or in Colvin (U.S. Patent No. 5,213,639), column 4, line 41 disclosing 0.07%, or US application 10/642,507 (US 2004/0099353) column 4, Table 1 disclosing about 0.06%. As a consequence in alloys where the Mn-content is in the range of incidental impurities, the Mn-2Fe proviso of Heymes et al. is more than very likely to be negative which is not allowed by Heymes et al.

B. Heymes et al. in view of Colvin

Claims 24 and 25 stand rejected under 35 USC § 103(a) as allegedly being unpatentable over Heymes et al. in view of Colvin. The Office Action asserts Heymes et al. teaches each feature of the rejected claims, except for annealing or reheating the hot rolled ingot and further hot rolling, for which purpose Colvin is cited. However, in view of the amendments to claim 23, reconsideration is respectfully requested. For example, as Colvin fails to cure the deficiencies of Heymes et al. alone, Applicants respectfully present claims 24 and 25 are patentable over Heymes et al. in view of Colvin.

Moreover, Colvin is concerned with series 2xxx alloys, having about 0.3 to 0.9% Mn (as recited by claims 1 and 70 therein). Hence the combination of the teachings of these references would actually lead one of ordinary skill in the art away from a process of manufacturing a product having Mn present only as an incidental element.

IV. Double Patenting

Claims 23-42 and 45-49 stand provisionally rejected as being unpatentable over claims 32-37 of co-pending Application No. 10/642,507 (US Patent Application Publication No. 2004/0112480). As this rejection is a provisional rejection, Applicants will file any necessary Terminal Disclaimer when required.

V. Conclusion

In view of the above, it is respectfully submitted that all objections and rejections are overcome. Thus, a Notice of Allowance is respectfully requested.

Respectfully submitted,

Date: May 25, 2005 By: _____

Anthony P. Venturino
Registration No. 31,674

APV/EPR
ATTORNEY DOCKET NO. APV31645
STEVENS, DAVIS, MILLER & MOSHER, L.L.P.
1615 L Street, N.W., Suite 850
Washington, D.C. 20036
Tel: 202-785-0100 / Fax. 202-785-0200